

What is claimed is:

1. A sheet processing apparatus for performing a sheet punching process on sheets being conveyed, comprising:

5 punching means for punching the sheets;

sheet end detecting means disposed for movement together with said punching means, for detecting an end position of each of the sheets being conveyed in a width direction thereof;

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moving means for moving said punching means and said sheet end detecting means in a direction at a right angle relative to a conveying direction of the sheets;

sheet detecting means for detecting each of the sheets being conveyed;

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movement amount detecting means for detecting an amount of movement by which each of the sheets has moved after detection of the sheet; and

movement starting means for determining based on the detected amount of movement whether each of the sheets has reached a predetermined position, and for causing said moving means to start moving said punching means and said sheet end detecting means when each of the sheets is determined to have reached said

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predetermined position.

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2. A sheet processing apparatus according to claim 1, wherein said movement starting means comprises means

for determining whether a distance in said conveying direction of the sheets between said sheet end detecting means and a trailing end of each of the sheets in said conveying direction of the sheets has become equal to a predetermined value, and said movement starting means causes said moving means to start moving said punching means and said sheet end detecting means when said distance has become equal to said predetermined value.

3. A sheet processing apparatus according to claim 2, wherein said predetermined value of the distance corresponds to a minimum size of the sheets that enables the sheets to be punched.

4. A sheet processing apparatus according to claim 1, wherein said movement starting means comprises means for determining whether a punching position on each of the sheets has reached a predetermined position, and said movement starting means causes said moving means to start moving said punching means and said sheet end detecting means when said punching position on the sheet has reached said predetermined position.

5. A sheet processing apparatus according to claim 2, wherein said movement amount detecting means starts detecting the amount of movement of each of the sheets when said sheet detecting means detects said trailing end of each of the sheets.

6. A sheet processing apparatus according to claim 2 ~~or 4~~, wherein said movement amount detecting means

starts detecting the amount of movement of each of the sheets when said sheet detecting means detects a leading end of each of the sheets in the conveying direction of the sheets.

5 7. A sheet processing apparatus according to claim 1, wherein said movement amount detecting means detects the amount of movement of each of the sheets based on a period of time for which the sheet has moved after detection of the sheet by said sheet detecting means and
10 on a speed at which the sheets are conveyed.

 8. A sheet processing apparatus according to claim 7, comprising a conveyance motor for conveying the sheets, and wherein said movement amount detecting means counts a clock for driving said conveyance motor after
15 detection of each of the sheets by said sheet detecting means and detects the amount of movement of the sheet based on a period of time of movement of the sheet corresponding to a count value obtained by said counting.

20 9. A sheet processing method of punching sheets being conveyed using punching means, comprising the steps of:

 detecting each of the sheets being conveyed;
 detecting an amount of movement by which each of
25 the sheets has moved after detection of the sheet;
 starting moving said punching means being movable in a direction at a right angle relative to a conveying

direction of the sheets when it is determined based on the detected amount of movement that each of the sheets has reached a predetermined position; and

5 moving sheet end detecting means together with said punching means to detect an end position of each of the sheets being conveyed in a width direction thereof.

10 10. A computer-readable storage medium that stores a program for causing a sheet processing apparatus having punching means for punching sheets being conveyed to execute a method comprising:

a step of detecting each of the sheets being conveyed;

15 a step of detecting an amount of movement by which each of the sheets has moved after detection of the sheet;

20 a step of starting moving said punching means being movable in a direction at a right angle relative to a conveying direction of the sheets when it is determined based on the detected amount of movement that each of the sheets has reached a predetermined position; and

a step of moving sheet end detecting means together with said punching means to detect an end position of each of the sheets sheet being conveyed in a width direction thereof

25 ~~Sub E's~~ 11. A sheet processing apparatus comprising:
sheet processing means for executing a sheet process to a sheet;

conveying means for conveying the sheet to be processed by said sheet processing means;

detecting means for detecting an end position of the sheet in a direction at a right angle relative to a conveying direction of the sheet; and

control means for controlling said sheet processing means to execute the sheet process to a position based on a detection result of said detecting means on the sheet, after a detecting operation by said detecting means; and

wherein said control means controls timing for starting the detecting operation by said detecting means so as to execute the detecting operation at a vicinity of a sheet processing position on the sheet at which said sheet process is executed by said sheet processing means.

12. A sheet processing apparatus according to claim 11, wherein said control means determines said timing for starting the detection of the end position of the sheet by said detecting means, based on a length of the sheet in the conveying direction of the sheet.

13. A sheet processing apparatus according to claim 11, wherein said sheet processing means is capable of executing the sheet process on plural types of sheets of different lengths in the conveying direction of the sheets, and wherein said control means sets timing for starting detection of an end position of each of the

plural types of sheets in the direction at a right angle relative to the conveying direction of the sheets by said detecting means depending on a length of each of the plural types of sheets in the conveying direction of the sheets.

14. A sheet processing apparatus according to claim 13, wherein if the sheet process is carried out on a sheet of a first size or a sheet of a second size having a larger length in the conveying direction of the sheets than said sheet of the first size, said control means delays the timing for starting the detection of the said sheet of the second size with respect to the timing for starting the detection of the end position of said sheet of the first size.

15. A sheet processing apparatus according to claim 13, wherein said control means sets the timing for starting the detection of the end position of each of said plural types of sheets by said detecting means to different values of timing according to the different lengths of said plural types of sheets in the conveying direction of the sheets such that the detection of the end position of each of the sheets is always carried out at the location close to said sheet processing position.

16. A sheet processing apparatus according to claim 11, wherein said sheet processing means is movable in the direction at a right angle relative to the conveying direction of the sheet.

17. A sheet processing apparatus according to claim 16, wherein said detecting means is movable in the direction at a right angle relative to the conveying direction of the sheet.

5 Sub B'1 18. A sheet processing apparatus according to claim 17, wherein said control means is responsive to starting of the detection of the end position of the sheet by said detecting means, for moving said sheet processing means together with said detecting means.

10 19. A sheet processing apparatus according to claim 11, wherein said control means causes said sheet processing means to execute the sheet process without stopping the conveyance of the sheet by said conveying means.

15 20. A sheet processing apparatus according to claim 11, wherein said sheet processing means includes punching process means for executing a punching process on the sheet.

Sub B'2 20 21. A sheet processing apparatus according to claim 11, wherein said sheet processing means executes the sheet process on the sheet without executing a sheet aligning process on the sheet.

25 22. A sheet processing apparatus according to claim 11, wherein said sheet processing apparatus can be connected to an image forming apparatus for forming images on a sheet, and wherein said sheet processing means executes the sheet process on a sheet supplied

from said image forming apparatus.

23. A sheet processing apparatus according to claim 22, wherein said control means controls timing for starting the sheet process to be executed on the sheet by said sheet processing means together with the timing for starting the detection of the end position of the sheet by said detecting means, such that said sheet processing means executes the sheet process on the sheet having an image formed surface thereof facing downward, at a trailing end thereof.

24. A method of controlling a sheet processing apparatus having sheet processing means for executing a sheet process to a sheet, conveying means for conveying the sheet to be processed by said sheet processing means, and detecting means for detecting an end position of the sheet in a direction at a right angle relative to a conveying direction of the sheet, the method comprising:

a control step of controlling said sheet processing means to execute the sheet process to a position based on a detection result of said detecting means on the sheet, after a detecting operation by said detecting means; and

wherein said control step controls timing for starting the detecting operation by said detecting means so as to execute the detecting operation at a vicinity of a sheet processing position on the sheet at which

said sheet process is executed by said sheet processing means.

25. A computer-readable storage medium that stores a program for causing a sheet processing apparatus having sheet processing means for executing a sheet process to a sheet, conveying means for conveying the sheet to be processed by said sheet processing means, and detecting means for detecting an end position of the sheet in a direction at a right angle relative to a conveying direction of the sheet, to execute a method comprising:

a control step of controlling said sheet processing means to execute the sheet process to a position based on a detection result of said detecting means on the sheet, after a detecting operation by said detecting means; and

wherein said control step controls timing for starting the detecting operation by said detecting means so as to execute the detecting operation at a vicinity of a sheet processing position on the sheet at which said sheet process is executed by said sheet processing means.

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